Montana Content Standards for Science Glossary

Attribute - An inherent characteristic.

Classification - Systematic arrangement of objects or organisms into groups or categories according to established criteria.

Control – A group of test subjects left untreated or unexposed to the independent variable and then compared with treated subjects in order to validate the test results; the standard for comparing experimental effects. Not all experiments have a control, though all have controlled variables (Cothorn, Giese, and Rezba 17).

Controlled Variable - A variable that is not changed and is kept the same for all tests; also referred to as a constant (Cothorn, Giese, and Rezba 17).

Data – Qualitative or quantitative values collected through observation or experimentation from which conclusions may be drawn.

Dependent Variable – The observed or measured variable in an experiment or study whose changes are determined by the presence or degree of one or more independent variables; also referred to as the responding variable.

Error Analysis – The process used to evaluate the total error throughout an experiment and indicate the accuracy of experimental results. This can be due to bias error, precision error, as well as others.

Evidence – Data and documentation that may either support or help refute inferences or conclusions.

Evolution – A process of change that explains why what is seen today is different from what existed in the past; it includes changes in the galaxies, stars, solar system, earth and life on earth. Biological evolution is any genetic and resulting phenotypic change in groups of organisms from generation to generation.

Experiment – The act of conducting a controlled test or investigation.

Fossil – Any recognizable structure originating from an organism, or any impression from such a structure, that has been preserved over geological time.

Geologic Timeline - a chronologic schema used by geologists and other earth scientists to describe the timing and relationships between events that have occurred during the history of Earth.

Hypothesis - A tentative explanation of a phenomenon, event, or the nature of an object based on prior experience, scientific background knowledge, preliminary observations, and logic. A hypothesis is testable (Fundamentals of Inquiry).

Independent Variable – A factor or condition that changes naturally or is intentionally manipulated by the investigator to observe the effect; also referred to as the manipulated variable.

Inquiry – A search for knowledge; a systematic process of teaching and learning where the learner:

- engages in scientifically oriented questions;
- gives priority to evidence in responding to questions;
- formulates explanations from evidence;
- connects explanations to scientific knowledge;
- communicates and justifies explanations.

(National Research Council 25-29).

Investigate - To observe or study by using a systematic inquiry approach.

Law - Summarizing statement of observed experimental facts that has been tested many times and is generally accepted as true.

Model - A description, analogy or a representation of something that helps us understand it better (e.g., a physical model, a conceptual model, a mathematical model).

Natural Phenomenon - An occurrence, circumstance, or fact that exists in or formed by nature and is perceptible by the senses.

Observation - To gather information and direct evidence about an object, event or phenomenon by using the senses and/or appropriate tools.

Planet - A celestial body that (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and (c) has cleared the neighborhood around its orbit (International Astronomical Union).

Plate Tectonics - Movements of the Earth's crustal plates, which result in changes in the position, size, and shape of continents and oceans (NASA Jet Propulsion Laboratory).

Prediction – A forecast of the outcome of a specific future event based on a pattern of evidence or a hypothesis (explanation). A predication based on a hypothesis can be used in planning a test of that hypothesis (Fundamentals of Inquiry).

Science - Systematic knowledge of the physical or material world gained through observation and experimentation.

Solar System - A system of planets, moons, asteroids, comets, dust, gas, and any other objects that orbit a star, tied to it by the star's gravitational force (NASA Space Place).

System - An organized group of related objects or components that form a whole.

Technology – 1. Human innovation in action that involves the generation of knowledge and processes to develop systems that solve problems and extend human capabilities; 2. The innovation, change, or modification of the natural environment to satisfy perceived human needs and wants (Massachusetts Science and Technology/Engineering).

Testable – A statement, question, or hypothesis that can be investigated through experimentation and/or observation.

Theory - Systematically organized knowledge applicable in a relatively wide variety of circumstances; especially, a system of assumptions, accepted principles and rules of procedure devised to analyze, predict or otherwise explain the nature or behavior of a specified set of phenomena ("Science Glossary").

Valid Test – Experimental design that consist of a change in one variable and a control group.

Variable - An attribute of a physical or an abstract system which may change its value while it is under observation.

Works Cited

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